

OPERATING SUMMARY

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TOWN OF

DUNNVILLE

WATER TREATMENT PLANT

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DUNNVILLE WATER TREATMENT PLANT

operated for

THE TOWN OF DUNNVILLE

INTERNATIONAL MINERALS AND CHEMICALS

CORPORATION (CANADA) LTD.

by the

MINISTRY OF THE ENVIRONMENT

1974 ANNUAL OPERATING SUMMARY

prepared by

Plant Performance Unit

TECHNICAL SERVICES BRANCH

T. Cross, Director

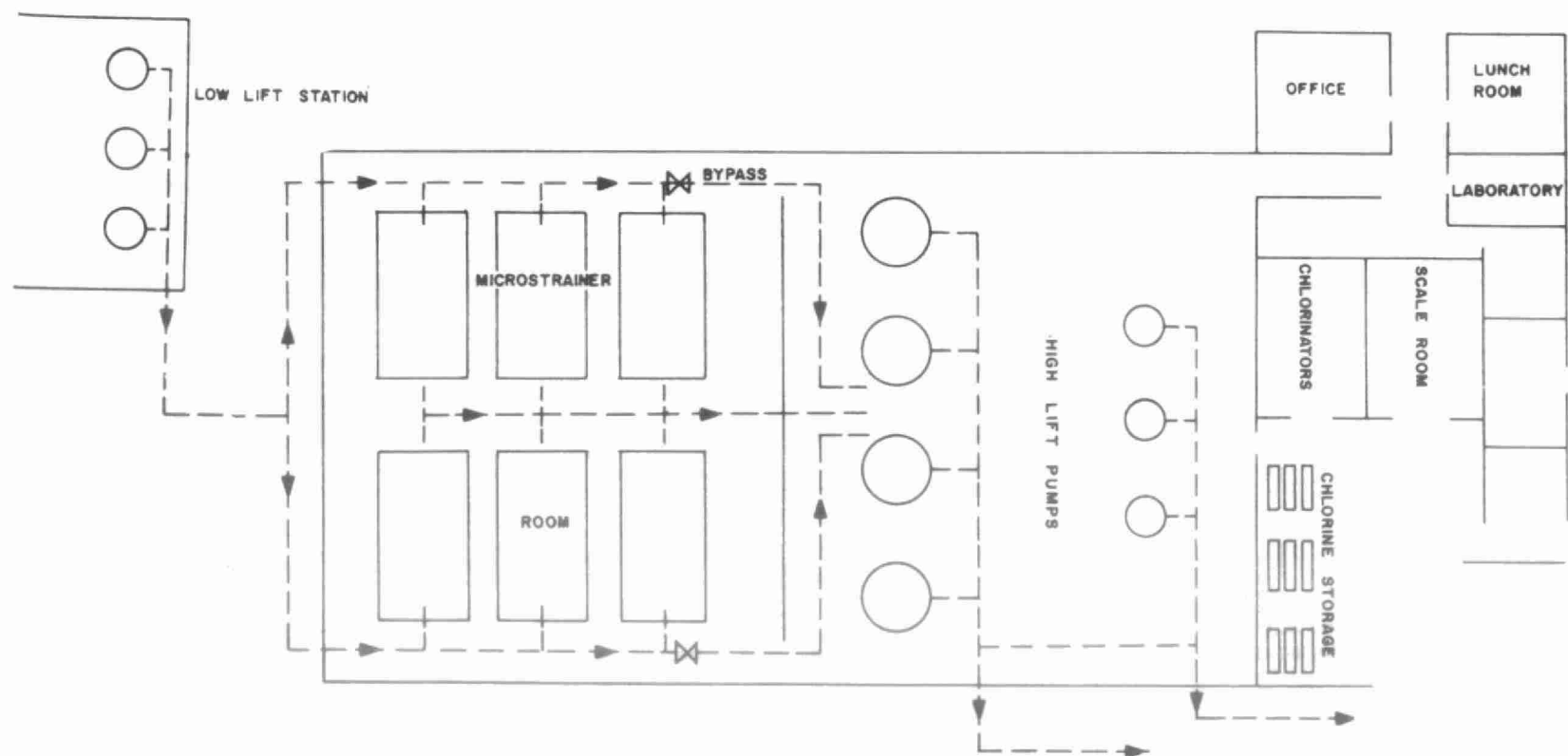


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DUNNVILLE REGIONAL WATER TREATMENT PLANT

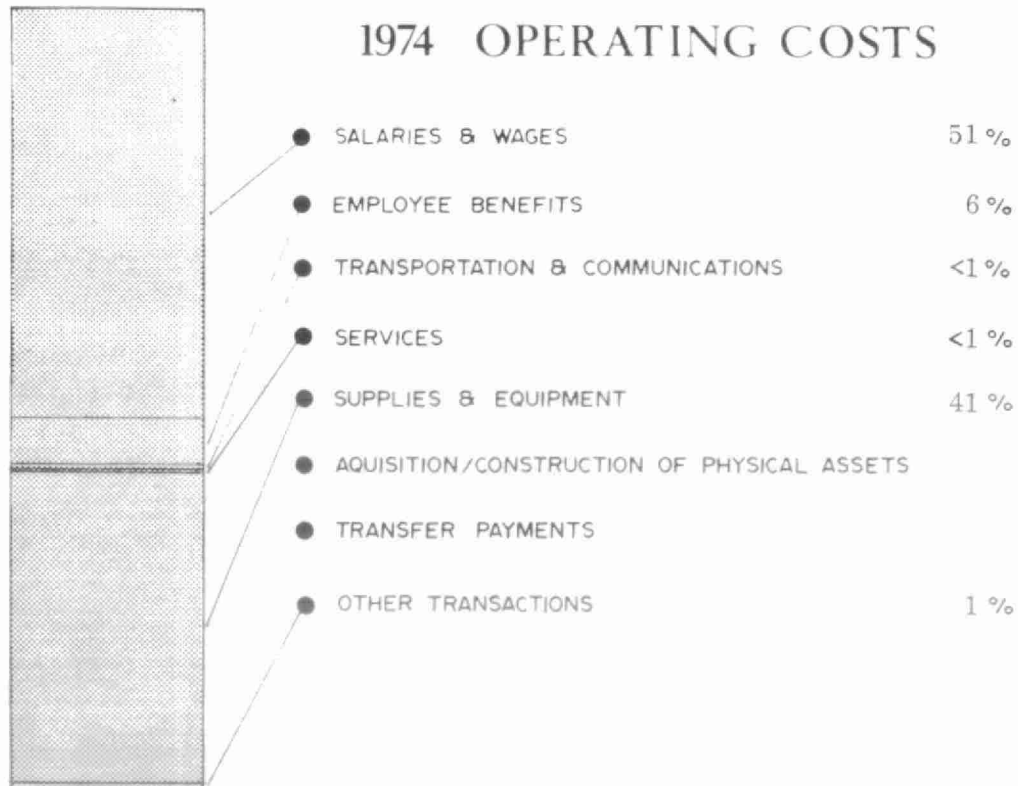


DESIGN DATA

PROJECT NO.	6-0017-58	<u>INTAKE</u>	<u>CLEARWELL</u>
NOMINAL CAPACITY	20.5 mgd	<u>Depth of Intake</u> - 17 - 20 ft	Size: Two compartments, total capacity 200,000 gal.
RAW WATER SOURCE	Lake Erie	<u>Intake Pipe</u>	<u>CHLORINATION</u>
		Size: 1600 ft of 48" dia asbestos bonded corrugated metal	<u>Chlorinator</u>
		<u>LOW LIFT PUMPING STATION</u>	Type: W & T A-711
		<u>Screens</u>	Size: Two 2000 lb per day
		One removable screens 5' 6" sq with 3/8" openings one travelling water bar screen	Chlorine added at entrance to clear well
		<u>Low Lift Pumps</u>	<u>HIGH LIFT PUMPS</u>
		Type: Byron Jackson vertical turbine	<u>Supply to Dunnville</u> (via 23,000 ft of 16" dia asbestos cement pipe)
		Size: Four 5700 gpm @ 38 ft TDH	Type: Wheeler Economy single stage
		<u>MICROSTRAINER</u>	Size: One 1000 gpm @ 135' TDH
		Type: Glenfield & Kennedy with MK 1 fabric (opening size 35 microns)	Two 1200 gpm at 230' TDH
		Size: Six 10' x 10'	<u>Supply to Port Maitland</u> (via 20,000 ft of 36" dia reinforced concrete pipe)
			Type: Worthington single stage
			Size: Four 4000 gpm @ 200' TDH

ANNUAL COSTS

1974 OPERATING COSTS



YEARLY OPERATING COSTS

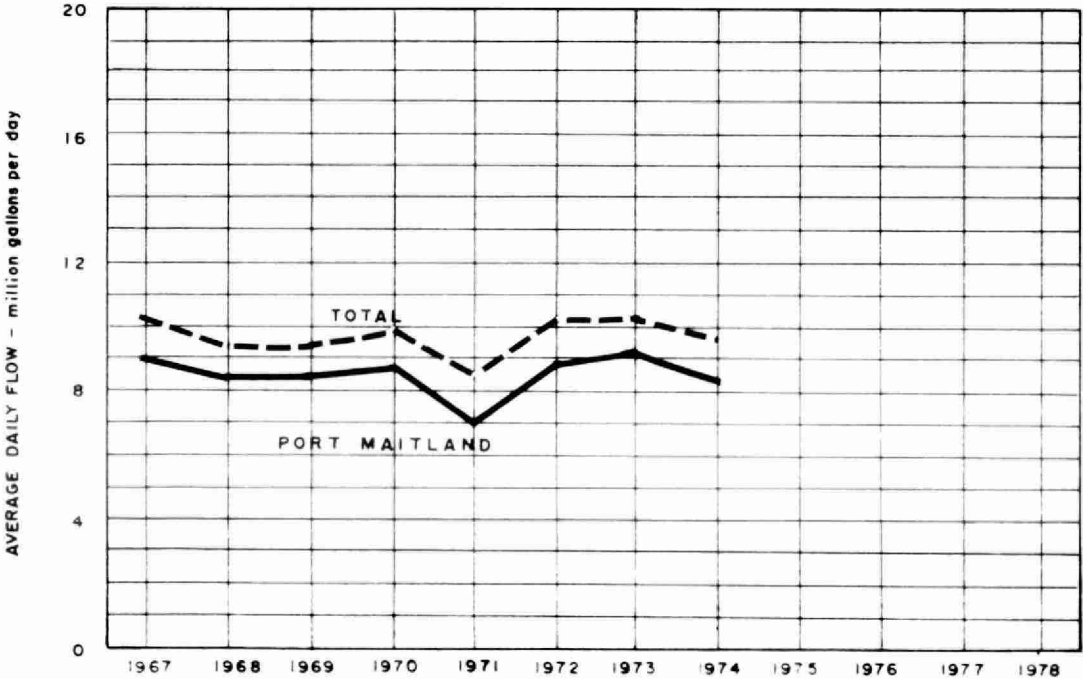
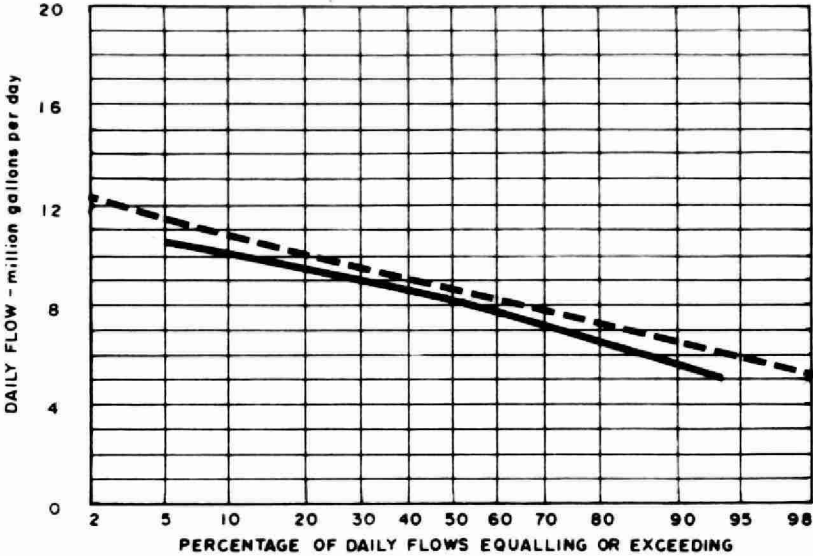
YEAR	WATER TREATED in million gallons	TOTAL OPERATING COSTS	UNIT COSTS
			in cents per 1000gal.
1969	3353	114,767	3
1970	3569	122,942	3
1971	2971	132,099	4
1972	3367	146,617	4
1973	3766	165,132	4
1974	3489	168,831	5

OPERATING EXPENDITURES

Regular Staff	\$ 85495	\$
Casual (Unclassified) Staff		
TOTAL SALARIES AND WAGES		85495
TOTAL EMPLOYEE BENEFITS		9789
TOTAL TRANSPORTATION AND COMMUNICATIONS		1324
Insurance	4306	
Sludge Haulage		
Repairs and Maintenance	40	
Other Services	- 3764	
TOTAL SERVICES		582
Machinery and Equipment	1468	
Chemicals	10447	
Utilities	60108	
Other Supplies and Equipment	- 2541	
TOTAL SUPPLIES AND EQUIPMENT		69482
TOTAL AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS		
TOTAL TRANSFER PAYMENTS		
OTHER TRANSACTIONS		2159
GRAND TOTAL	GRAND TOTAL	\$ 168831

PROCESS DATA

FLOWS



DESIGN CAPACITY 20.5 MGD

PLANT PERFORMANCE

MONTH	FLOWS			RAW WATER			TREATED WATER					
	TOTAL PLANT OUTPUT million gallons	AVERAGE DAILY FLOW million gallons	MAXIMUM DAY'S FLOW million gallons	TOTAL ALGAE ASU/ml	TURBIDITY (AVERAGE) FTU	FILTER- ABILITY INDEX units	TURBIDITY		FILTER- ABILITY INDEX units	TOTAL ALGAE ASU/ml	TEMPERATURE	
							AVERAGE FTU	MAXIMUM FTU			AVERAGE ° F	MAXIMUM ° F
JAN	260.48	8.40	9.68	688	26.6	.20	26.2	47.0	.07	131	32	32
FEB	229.02	8.18	8.96	567	22.5	.11	19.0	64.0	.05	158	32	32
MAR	291.49	9.40	10.41	1317	38.4	.12	38.2	98.0	.06	118	33	35
APR	311.66	10.39	11.85	604	23.5	.15	25.2	125.0	.05	197	37	42
MAY	279.78	9.02	11.73	581	27.9	.08	27.5	144.0	.04	131	45	50
JUNE	323.23	11.08	11.81	471	9.2	.04	14.1	56.5	.04	-	54	61
JULY	337.24	10.88	12.58	583	70.7	.07	11.4	26.7	.03	-	61	66
AUG	320.60	10.34	12.24	1545	8.8	.07	5.6	39.6	.03	82	67	69
SEPT	320.79	10.69	11.79	1112	12.8	.17	12.8	34.2	.03	170	63	69
OCT	313.13	10.10	11.39	800	14.4	.07	11.5	44.6	.03	-	51	56
NOV	205.94	6.86	9.63	964	23.1	.03	23.4	67.0	.07	-	46	50
DEC	295.99	9.55	12.06	1098	20.9	.17	21.2	34.5	.06	-	35	39
TOTAL	3489.35	-	-	-	-	-	-	-	-	-	-	-
AVG.		9.56	MAXIMUM 12.58	861	24.9	.11	19.7	MAXIMUM 144.0	.05	141	46	MAXIMUM 69

Distribution of Flows:	International Minerals Corp	3046.012
	Town of Dunnville	443.335
	Total	3489.347

CHLORINATION and DISINFECTION

MONTH	RAW WATER					PLANT EFFLUENT		DISTRIBUTION SYSTEM		CHLORINATION			
	NUMBER OF SAMPLES HAVING TOTAL COLIFORM ORGANISMS PER 100 ml OF					NUMBER OF SAMPLES TAKEN	NUMBER HAVING COLIFORM ORGANISMS	NUMBER OF SAMPLES TAKEN	NUMBER HAVING COLIFORM ORGANISMS	TOTAL AMOUNT OF CHLORINE USED 10 ³ pounds	DOSAGE		RESIDUAL IN PLANT EFFLUENT mg/l
	0	1 - 3	4 - 32	33 - 320	> 320						PRE - mg/l	POST - mg/l	
JAN	0	0	0	2	3	15	0	0	0	2.8	-	1.2	.5
FEB	0	0	0	1	3	12	0	0	0	2.6	-	1.3	.5
MAR	0	0	0	0	4	12	0	0	0	3.3	-	1.1	.5
APR	0	0	0	2	3	15	0	0	0	3.5	-	1.3	.5
MAY	0	0	0	2	2	12	0	0	0	3.5	-	1.2	.5
JUNE	0	0	1	0	3	12	0	0	0	3.8	-	1.3	.5
JULY	0	0	0	0	5	15	0	0	0	3.7	-	1.1	.5
AUG	0	0	0	1	3	12	0	0	0	3.4	-	1.1	.5
SEPT	0	0	0	2	3	15	0	0	0	2.6		.8	.5
OCT	0	0	1	2	1	12	0	0	0	2.6		.8	.5
NOV	0	0	1	1	2	12	0	0	0	2.2		1.1	.5
DEC	0	0	0	1	2	9	0	0	0	2.9		1.0	.5
TOTAL	0	0	3	14	34	153	0	0	0	36.9			
AVG.	410 (NOTE - Average shown is the GEOMETRIC MEAN)									101 pounds per day		1.1	.5

TREATMENT DATA

MONTH	ALGAE									
	TOTAL		BLUE-GREENS		GREENS		FLAGELLATES		DIATOMS	
	RAW ASU/ml	TREATED ASU/ml	RAW ASU/ml	TREATED ASU/ml	RAW ASU/ml	TREATED ASU/ml	RAW ASU/ml	TREATED ASU/ml	RAW ASU/ml	TREATED ASU/ml
JAN	688	131	57	32	170	24	8	-	504	94
FEB	567	158	32	32	109	30	5	13	430	62
MAR	1317	118	-	-	-	-	-	-	-	-
APR	604	197	34	15	43	29	68	8	914	145
MAY	581	131	53	17	56	6	125	63	346	45
JUNE	471	-	96	-	76	-	-	-	195	-
JULY	583	-	78	-	40	-	4	-	218	-
AUG	1545	82	-	-	-	-	-	-	-	-
SEPT	1112	170	52	18	257	89	193	17	803	46
OCT	800	-	86	-	314	-	50	-	558	-
NOV	964	-	70	-	210	-	-	-	697	-
DEC	1098	-	44	-	375	-	49	-	598	-
TOTAL										
AVG.	861	141	60	23	165	36	63	25	526	78

WATER QUALITY

PROPERTY	RAW & TREATED WATER				DESIRABLE STANDARDS
	NUMBER OF SAMPLES	AVERAGE	MAXIMUM	MINIMUM	
HARDNESS in mg/l as CaCO_3	9	142	146	134	80 - 100
ALKALINITY in mg/l as CaCO_3	9	103	108	98	30 - 100
IRON in mg/l Fe	9	0.56	1.30	0.15	Less than 0.3
CHLORIDE in mg/l Cl^-	9	24	27	23	Less than 250
pH in pH units	9	7.9	8.5	7.3	7.0 - 8.5

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